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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/770,725	01/26/2001	Li Yang	791_130	6015

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EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 07/03/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/770,725

Applicant(s)

YANG ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5-7 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "highly graphitized" in claims 5-7 is a relative term which renders the claim indefinite. The term "highly graphitized" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 1, 2, 12, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Watanabe et al (U.S. Patent 6,083,644). Regarding claim 1, the reference is directed to a nonaqueous lithium secondary battery comprising a positive and negative electrode laminated through a separator (see abstract and Figure 1). Regarding claims 1 and 2, the battery contains an electrolyte comprising lithium hexafluorophosphate (see col. 12, line 46). Regarding claim 1, as disclosed in column 14, lines 48-52, the positive electrode mixture and the negative electrode mixture both have moisture contents of 50 ppm or less. Therefore, the moisture content of both electrodes would inherently be lower than 5,000 ppm in case of heating the electrodes to 25 to 200°C, as recited in claim 1. Regarding claims 12 and 13, which recite that the battery is used in an electric automobile, these claims do not have to be accorded patentable weight because they recite an intended use and do not further limit the structure of the battery (MPEP §2114).

Thus, the instant claims are anticipated.

#### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 4, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al in view of Takami et al (U.S. Patent 6,350,544).

Watanabe et al. is applied to claims 1, 2, 12, and 13 for the reasons stated above.

Watanabe et al. do not expressly teach that the positive electrode material is a lithium manganese oxide having a cubic spinel structure (e.g.,  $\text{LiMn}_2\text{O}_4$ ).

In column 4, lines 48 and 49, Takami et al. teach a lithium battery comprising a positive electrode material comprising  $\text{LiMn}_2\text{O}_4$ .

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Takami et al. would motivate the artisan to use  $\text{LiMn}_2\text{O}_4$  as the positive electrode material of Watanabe et al. In the cited passage, Takami et al. teach that  $\text{LiMn}_2\text{O}_4$  is "preferable in view of obtaining a high voltage." Accordingly, the artisan would be motivated to use  $\text{LiMn}_2\text{O}_4$  as the positive electrode material of Watanabe et al.

Regarding claims 14 and 15, these claims are not accorded patentable weight for the reasons set forth above.

7. Claims 5-7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. in view of Takami et al. as applied to claims 3, 4, 14, and 15 above, and further in view of Omaru et al (U.S. Patent 6,277,522).

Watanabe et al. do not expressly teach that the negative electrode active material is a graphitized carbon fiber.

In column 8, lines 13-21, Omaru et al. teach a negative electrode comprising a graphitized carbon fiber.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Omaru et al. would motivate the artisan to use graphitized carbon fiber as the negative electrode material of Watanabe et al. In the cited passage, Takami et al. teach that graphitized fiber can be realized which has "strength tolerable to expansion/contraction at the time of charge/discharge and high capacity." Accordingly, the artisan would be motivated to use graphitized carbon fiber as the negative electrode material of Watanabe et al.

8. Claims 1-4 and 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanai et al (U.S. Patent 6,235,426) in view of Watanabe et al., in further view of Takami et al.

Regarding claim 1, Yanai et al. is directed to a nonaqueous lithium secondary battery comprising a positive and negative electrode laminated through a separator (see abstract and Figure 1). Regarding claims 1 and 2, the battery contains an electrolyte comprising lithium hexafluorophosphate (see col. 8, line 42). Regarding claims 8-11, the battery has a capacity of 3.5 Ah (see Table 1).

Yanai et al. do not expressly teach the water content of each electrode (as recited in claim 1), or that the positive electrode material is a lithium manganese oxide having a cubic spinel structure (e.g.,  $\text{LiMn}_2\text{O}_4$ ) (claims 3, 4).

As set forth in section 6 above, in column 4, lines 48 and 49, Takami et al. teach a lithium battery comprising a positive electrode material comprising  $\text{LiMn}_2\text{O}_4$ .

As set forth in section 4 above, Watanabe et al. teach in column 14, lines 48-52 that the positive electrode mixture and the negative electrode mixture both have moisture contents of 50 ppm or less.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Takami et al. would motivate the artisan to use  $\text{LiMn}_2\text{O}_4$  as the positive electrode material of Yanai et al. In the cited passage, Takami et al. teach that  $\text{LiMn}_2\text{O}_4$  is "preferable in view of obtaining a high voltage." Accordingly, the artisan would be motivated to use  $\text{LiMn}_2\text{O}_4$  as the positive electrode material of Yanai et al.

Furthermore, the disclosure of Watanabe et al. would motivate the artisan to use electrodes having a moisture content of less than 50 ppm in the battery of Yanai et al. In column 14, line 49 et seq., Watanabe et al. teach that it is "preferred...from the point of cycle property" that the electrodes have such a low moisture content. Additionally, the combined moisture content of the electrodes would inherently be lower than 5,000 ppm in case of heating the electrodes to 25 to 200°C, as recited in claim 1.

Regarding claims 12-15, these claims are not accorded patentable weight for the reasons set forth above.

*Conclusion*

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-5408 or (703) 305-5433.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
Patrick Ryan  
Supervisory Patent Examiner  
Technology Center 1700

JSC

June 25, 2002